

CLAIMS

We claim:

1. An apparatus, comprising:
an actuator;
a sensor coupled to the actuator, the sensor to detect a physical state of a substance within the actuator; and
a thermoelectric module coupled to the actuator, the module to encourage the substance within the actuator to change physical state.
2. The apparatus of claim 1, further comprising:
a start up circuit coupled to the actuator, sensor and module, the start up circuit, actuator, sensor and module forming an automatic feedback system.
3. The apparatus of claim 1, wherein the actuator is one of a fluid pump and a compressor.
4. The apparatus of claim 1, wherein the sensor is one of a resistance temperature detector, a thermistor, an infrared sensor, a gas sensor and a thermocouple.
5. The apparatus of claim 1, wherein the thermoelectric module comprises:
one of a thermoelectric cooler and a heater.
6. A method, comprising:
(a) determining a presence of a threshold amount of one of a fluid and a vapor in an actuator; and
(b) one of condensing vapor and evaporating liquid present in the actuator.
7. The method of claim 6, wherein determining comprises:
checking a sensor coupled to the actuator.
8. The method of claim 6, wherein evaporating comprises:
heating liquid to a boiling point, the heat generated by a heater coupled to the actuator.

9. The method of claim 6, wherein condensing comprises:
cooling vapor within a liquid pump to a condensation point, wherein
vapor heat is absorbed by a thermoelectric module coupled to the actuator.
10. The method of claim 6, further comprising:
(c) repeating (a) and (b) until there is no longer a threshold amount
of one of the fluid and the vapor in the actuator.
11. The method of claim 10, further comprising:
(d) applying power to the actuator.
12. The method of claim 11, further comprising:
(e) applying power to a heat source coupled to the actuator.
13. A system, comprising:
an actuator;
a sensor coupled to the actuator, the sensor to detect a physical state of a
substance within the actuator;
a thermoelectric module coupled to the actuator, the module to
encourage the substance within the actuator to change physical state; and
a heat source coupled to the actuator, the heat source to be cooled by the
operation of the actuator.
14. The system of claim 13, wherein the actuator is one of a pump and a
compressor.
15. The system of claim 14, wherein the pump is oriented at a location
independent of the gravitationally low point.
16. The system of claim 14, wherein the compressor is oriented at a location
independent of the gravitationally high point.
17. The system of claim 13, wherein the sensor is one of a resistance
temperature detector, a thermistor, an infrared sensor, a gas sensor and a
thermocouple.
18. The system of claim 13, wherein the thermoelectric module comprises:
one of a thermoelectric cooler and a heater.

19. The system of claim 13, further comprising:
a cold plate coupled to the heat source.
20. The system of claim 13, further comprising:
a heat exchanger coupled to the actuator.
21. The system of claim 13, further comprising:
a start up circuit coupled to the actuator, sensor and module, the start up circuit, actuator, sensor and module forming an automatic feedback system.
22. The system of claim 13, further comprising:
an integrated circuit package containing a die in which the actuator, sensor, thermoelectric module and heat source are built.